

## CLAIMS:

1. A mixing apparatus for concrete including:
  - a mixing drum supported for rotation about a longitudinal axis, the drum having a closed end defined by a drum head and an open end to receive batch materials to be
  - 5 mixed;
  - a first, generally helical, mixing blade disposed within the drum and extending towards the drum head; and
  - a second blade extending at an angle from the mixing blade toward the drum head, the second blade being adapted upon mixing rotation of the drum to
  - 10 push/mechanically transfer material from the bottom of the drum near the drum head and to elevate the material for cascading discharge toward the open end of the drum and downward toward the area of largest diameter of the drum.
2. A mixing apparatus as claimed in claim 1 wherein the mixing blade terminates at the second blade.
- 15 3. A mixing apparatus as claimed in any preceding claim wherein the helical mixing blade develops in a clockwise direction from an open end of the drum towards the drum head and the second blade extends in an anti-clockwise direction towards the drum head.
4. A mixing apparatus as claimed in any one of claims 1 to 3 wherein the helical
- 20 mixing blade develops in an anti-clockwise direction from an open end of the drum towards the drum head and the second blade extends in a clockwise direction towards the drum head.
5. A mixing apparatus as claimed in any preceding claim wherein the second blade meets the helical mixing blade at an angle of about  $90^{\circ}$  to  $100^{\circ}$ .
- 25 6. A mixing apparatus as claimed in any preceding claim wherein the second blade meets the helical mixing blade at an angle of about  $90^{\circ}$ .
7. A mixing apparatus as claimed in any preceding claim wherein the second blade is bent at a location spaced from the helical mixing blade.
8. A mixing apparatus as claimed in any preceding claim wherein the drum
- 30 comprises a first frustro-conical portion extending from a relatively smaller diameter open end to a generally cylindrical central portion having a relatively larger diameter, most preferably about 2450mm, and a second frustro-conical portion which gradually narrows to a concave plate which defines the drum head.
9. A mixing apparatus as claimed in claim 8 wherein the second blade meets the
- 35 helical mixing blade in the second frustro-conical portion near to where the central portion meets the second frustro-conical portion.

10. A mixing apparatus as claimed in any preceding claim wherein the helical blade defines a spillway formation adjacent the second blade and the height of the second blade is greater than the height of the adjoining mixing blade at the point of intersection, thereby to define a side wall of the spillway formation.
- 5 11. A mixing apparatus as claimed in any preceding claim wherein the second blade is tapered, progressively reducing in height from near the mixing blade to near the drum head.
12. A mixing apparatus as claimed in any preceding claim wherein the mixing blade terminates at the second blade.
- 10 13. A mixing apparatus as claimed in any preceding claim wherein the apparatus further includes a discharge blade extending from near the drum head and terminating near the second blade.
14. A mixing apparatus as claimed in any preceding claim wherein the apparatus further includes a pair of mixing blades, each including a respective second blade.
- 15 15. A mixing apparatus as claimed in any preceding claim wherein the second blade includes a one or more drainage holes.
16. A mixing apparatus as claimed in 16 wherein one drainage hole is located where the second blade meets the drum head.
17. A mixing apparatus as claimed in 15 or 16 wherein one drainage hole is located  
20 where the second blade meets the mixing blade.
18. A mixing apparatus as claimed in any preceding claim wherein the mixing drum is supported on a truck for rotation about a longitudinal axis inclined at about  $13^{\circ}$  to the horizontal.